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ABSTRACT

A study investigated the academic growth, self concept, and interracial friendship behavior of 956 black and white sixth graders under teachers of varying characteristics. The major independent variable was teacher characteristics, the independent variables were four measures of the academic growth of pupils and four measures of their attitudes. After one week's observation researchers rated the 36 white teachers on 13 dimensions using Ryans' (1960) Characteristics of Teachers Scale. Validity of ratings was measured by examination of narratives and interview protocols and by comparison of ratings of first/second observers and observer/mother. Factor analysis of ratings revealed three clusters of characteristics ("child-orientation," "task-orientation," and "fairness") that were unrelated to background characteristics of teachers or ability level of pupils. Relationships were examined by means of zero order correlations, analysis of variance, and multiple regression analysis. For black pupils, child-orientation correlated significantly with reading growth and fairness with improved conduct. Between-classroom variance in black reading scores nearly doubled from fall to spring. The relationship of teacher characteristics and pupil outcomes did not diminish when the effects of sex, IQ, family SES, and classroom SES and percentage white were removed through multiple regression analysis. Conclusion: Minority group children appear to be responsive to teachers with interpersonal skill, rather than subject-competence. (Author/JS)

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THIRTY-SIX TEACHERS: THEIR CHARACTERISTICS, AND OUTCOMES FOR BLACK AND WHITE PUPILS

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INTRODUCTION

One aspect of school desegregation that has been much neglected by researchers is the influence of teachers on the adjustment of children to interracial classrooms. Social scientists have long recognized the potentially important role of the leader in any desegregated situation (Allport, 1954; Dean and Rosen, 1955; Yarrow and Yarrow, 1958) and of the teacher in the desegregated classroom (Taba, 1955; Katz, 1957; Clark, 1965). That teachers can have a great influence on minority group children can also be inferred from such research evidence as Gottlieb's (1964) finding that white teachers perceived ghetto children more negatively than did black teachers, Amos' (1952) report that Negro pupils believed teachers to be more unfavorable to them than did white pupils or than their teachers themselves claimed to be, and the Davidson and Lang (1960) demonstration of a relation between children's perceptions of their teachers' feelings towards them and their actual achievement. Researchers also find that children perform better if their teachers expect them to do so (Rosenthal and Jacobson, 1968) or dispense praise and positive reinforcement (Clark and Walberg, 1966). Such studies suggest that in the desegregated classroom characteristics of the teacher will affect the achievement, self-concept and interracial behavior of both majority group and minority group pupils. But this prediction remains largely untested.

It is not only in regard to the adjustment to an integrated situation that the effect of a teacher on his pupils is insufficiently documented. There is also little evidence of teacher effectiveness in regard to any other kind of outcome. Sarane Boocock (1966) reviews 25 years of research only to conclude, "Very little seems to be known about the relationship

between what teachers do in the classroom and the subsequent behavior of students" (p. 6). Other reviewers agree (Biddle, 1964; Wynne, 1969; Rosenshine and Furst, 1970). A major finding of the Coleman Report (1967) was that only a small part of the school-to-school variance in pupil achievement is attributable to school factors, although characteristics of teachers (especially their verbal ability) account for more variance than any other school factor and more for minority than for majority group pupils. Unfortunately, the EEOS data do not allow the matching of teachers with their own pupils. McPartland (1968) in his reanalysis of this data, achieved a degree of matching by grouping teachers in a school according to the racial proportion of the students they said they taught. He found no relation between the verbal competence of teachers and pupils when classroom racial and social class composition was held constant.

In short, though a relation between quality of teaching and quality of learning appears axiomatic, it has proven hard to demonstrate. It may be even harder to study the process in the desegregated classroom, where teaching and learning both have racial components. Nevertheless, this was the aim of this paper. Specifically, observers' ratings of 36 teachers of interracial sixth grade classrooms are related to their pupils' academic growth, self-concept and interracial friendship behavior.

PROCEDURES

The Sample

The study was part of a larger investigation into the achievement and attitudes of children in interracial sixth grade classrooms in a large Northern city. Eighteen schools were randomly drawn from cells in

a matrix representing the racial and social class distribution of those elementary schools in the city with five or more black sixth graders. Two classrooms were selected from each school (again randomly). The final sample included all 956 children in these 36 classrooms, of whom 497 were white, 411 Negro, and 48 of other ethnic backgrounds (Chinese, Puerto Rican, etc.). The classrooms varied from 7 to 100 in the percentage of black children enrolled and from lower to middle in mean socioeconomic status (SES). School racial mixture and SES were to a degree independent. Among the schools of lowest SES half were majority white, and among the schools with many middle class pupils one was all-black.

The 36 classes were observed each for a week by one of a staff of eight. For four days the staff member ("first observer") sat in a back-row desk, kept a running narrative of activities and behavior, scored teacher-pupil and pupil-pupil interaction, interviewed the teacher, and administered attitude and sociometric tests to pupils. On one day she exchanged classrooms with the staff member assigned to the other sixth grade room in the same school ("second observer"). At the end of the week both observers wrote summary comments on the teachers' academic policies and differential treatment of white and black pupils and scored them on a modified version of Ryans (1960) Characteristics of Teachers Scale. Neither observer had examined pupils' test scores and grades before rating the teacher; a third staff member copied these data from the school records.

Teacher Characteristics

The major independent variable of this analysis, teacher characteristics, are factor scores derived from the ratings the teachers re-

ceived from "first" observers on the Ryans Scale. This is a semantic differential instrument on which teachers were rated 1 to 7 according to their position on 13 qualities. (See Table 1.) Observers were also asked to give each teacher an overall score. Overall and on the separate characteristics there is good range, but a tendency towards positive ratings. No one of the eight observers showed consistent bias toward the top or bottom of the scale, and the four observers who covered the most classrooms each used a range of 5 points in their overall ratings.

-- Table 1 about here --

Three procedures were used to test the reliability and validity of ratings: (1) Narrative accounts of classroom interaction and interview replies of teachers were examined and found to corroborate the evaluations of the teachers. (2) The independent evaluations of first and second observers of the same classrooms were compared (see Table 1). Overall agreement was fairly high (r = .68). For six teachers the two evaluations are identical, and for fifteen others only off by one point. Together this is 84% of the overall ratings. Agreement is less high on the separate items than overall, but even here 67% of the ratings are the same or only off by one point.[1] There is greatest accord on Pessimistic-Optimistic and Harsh-Kindly. There is least accord on Inarticulate-Fluent, Autocratic-Democratic, and Partial-Fair (Generally). These aspects of teaching behavior are either hard to judge in a short span or capable of divergent interpretations. (3) A further test of the validity of the

[1] Fox (1966) reports the following agreement between independent observers using the Ryans check list in the New York Open Enrollment Study:

35.2%	identical	
41.2	"	within 1 point
23.6	"	" 2 points
5.3	"	" 3 "

scores was afforded by interviews with a random sub-sample of 4 black and 4 white mothers for each classroom. Evaluations of their child's teacher by mothers were later coded according to the same overall scale as that used by classroom observers. In six classrooms the average mother's rating was the same as that of the main observer. The ratings were 1 off fifteen times, 2 off ten times and 3 off four times. Observers gave the teachers higher ratings than did mothers 18 times and lower ratings 11 times. The zero order correlation for the ratings of the mothers and observers is .29 overall (see Table 1). All in all, although it was not possible to establish beyond doubt the validity of the observers' ratings of teachers, nevertheless there was some support for accepting them at face value.

A factor analysis[2] of the 13 ratings of teachers by observers revealed both strong intercorrelation among items and the presence of three distinct sub-scales, labeled Child-oriented, Task-oriented, and Fair. Table 2 shows the factor loadings.

-- Table 2 about here --

The Child-oriented teacher has high ratings on these dimensions: democratic, responsive, understanding, kindly, adaptable, fair, and optimistic. The Task-oriented teacher was rated fluent, confident, broad and stimulating. The Fair teacher was rated systematic and fair, both generally and in regard to race. The factor scores are the units utilized in the subsequent analysis. The reader should bear in mind that the labels are shorthand for the factors and thus for observer ratings of teachers on a number of

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[2]The original factor solution was principal components with one in the principal diagonal. The rotation was orthogonal varimax. Latent Root:
Factor 1 - 8.392
" 2 - 2.089
" 3 - 0.883

qualities found to vary together.

Background characteristics of the teachers showed considerable diversity except in regard to race. All were white, but only half were women. In age they ranged from mid-twenties to mid-sixties, in experience as a teacher from less than one year to over thirty years. Twenty held masters degrees; thirteen served as assistant principals as well as sixth grade teachers. Nineteen were of Irish origin; twenty-one had attended elementary school in this city (11 parochial and 10 public); and half were from white collar, half from blue collar, parental homes. In view of such diversity, an association between certain status characteristics and the ratings by observers seemed likely. In fact, no such relationship appeared. Although cross-tabulations indicated some association between background and ratings on some variables, there was also a range of teacher quality across all background characteristics. Moreover, no strong selective factor appears to have resulted in a clustering of the most highly rated teachers in middle class schools or (within schools) in classes for the academically able.[3]

Pupil Outcomes

The dependent variables of the study are four measures of the academic growth of pupils and four measures of their attitudes. For each measure of academic performance there are two readings (Time 1 and Time 2). For the correlational analysis, growth is a Time 2 minus Time 1 score. For the regression analysis, the Time 2 score is the dependent variable and the Time 1 score was entered into the equations as one of the independent variables.

[3]Heterogeneous grouping is standard practice in the elementary classrooms of the city.

(1) Reading Achievement - Grade-equivalent scores on Metropolitan Achievement Test, fall and spring, grade six (Paragraph and Word Meaning sub-tests averaged).

(2) GPA - Average academic mark, grades 2-5 or 6.

(3) Conduct - Average conduct mark, grades 2-5 or 6.

(4) Attendance - Number of absences (reversed), grades 4-5 or 6.

(5) Academic Self-Concept - Self-placement on 10-runged ladder representing "sixth graders in this school, the best students at the top (10) and the worst students at the bottom" (1).

(6) "My teacher thinks I am" - Pupil's mean estimate (1-5) of teacher's responses on 10-item semantic differential scale.[4]

(7) Fate Control - Summary score on three true-false items adapted from Coleman, et al. (1966) to measure sense of environmental control.[5]

(8) Friendliness to Other Race - Difference between mean friendship rating (1-5) given to classmates of own and other racial group.

RESULTS

The relation between characteristics of the 36 teachers and outcomes for their pupils was examined by means of zero order correlations, analysis of variance, and multiple regression analysis. Table 3 shows, for each race separately, the correlations between the three rotated factor scores for teacher ratings and measures of individual pupil growth and attitudes.

-- Table 3 about here --

For white pupils only 2 of the 24 coefficients reach statistical significance, both at the .01 level: conduct improved under Child-oriented teachers and attendance deteriorated under Fair teachers. For blacks 4 of

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[4] Sad - Happy
Lazy - Hard-working
Mean - Kind
Proud - Not Proud
Stupid - Smart
Bad - Good
Unsure - Sure
Unsuccessful - Successful
Not a Good Student - A Good Student
Follower - Leader

[5] True-False:
Good luck is more important than hard work for success.
People like me don't have much of a chance to be successful in life.
When I make plans I am almost sure I can make them work.

the 24 coefficients reached significance level, two of these at the .01 level: pupils felt that Child-oriented teachers thought well of them, but that Task-oriented teachers did not. Their conduct improved under Fair teachers. But the strongest relationship for black pupils was that between teacher orientation to the child and growth in reading.

Coleman (1966) found that, of all measures of teacher quality available in the EEOS data, verbal ability of teachers was most related to the verbal ability of pupils in the same school. But the present study which matches teachers and pupils by classroom and measures change over a six-month period, finds no zero order relation between teachers' ratings on fluency and pupils' gain in reading comprehension. Nor do we find that length of experience, another frequent measure of teaching quality, contributes to growth. Instead for blacks it is kindliness ($r = .35$), adaptability ($r = .42$) and optimism ($r = .41$) that are the significant factors. Another variable that is significantly related to their reading growth is the teacher's response to an interview item, "Are test scores a good indication of a pupil's ability?". Teachers who answer No have pupils with largest gains ($r = .45$).

Analysis of variance confirmed the possibility that pupil-oriented teaching contributed to black growth in reading. In the fall 17% of the variance in black reading scores was between classrooms; in the spring 28% was between classrooms. It is plausible to infer that the difference might be due at least in part to the influence of teachers. However, since class percent white is significantly related to ratings of teachers on all three dimensions (especially to scores on child-orientation) and since there is also some association between class SES or level of reading achievement and teacher ratings, the apparent relation between teacher

and pupil characteristics may be spurious and the result of their joint association with these background characteristics.

A multiple regression analysis was then performed of mean classroom reading achievement on teacher characteristics, controlling on classroom percentage white and mean SES and mean IQ. Since the difference between two test scores is known to be unreliable, the dependent variable is not reading growth fall to spring. Instead spring reading is the dependent variable and fall reading is entered into the equations as an independent variable. The results shown in Table 4 indicate that controlling on other variables does not diminish the teacher-pupil relationship. Black pupils made significantly greater gains in reading under Child-oriented teachers, but white children apparently did best under teachers labeled Task-oriented.

-- Table 4 about here --

Finally we ran individual level regression equations for the four measures of achievement and four measures of attitudes entering as independent variables sex, individual SES, classroom SES, classroom percentage white and relevant prior measures of achievement, as well as teacher factor scores. We recognize that analysis using individual scores rather than classroom means is in a sense inappropriate here, since teacher scores are the same for all pupils in class. But our focus in this research is the pupil, not the teacher, and analysis by classroom means ignores the separate effects on his achievement of individual and group background characteristics. In the interracial classroom the interplay of these variables may be crucial. Therefore, we show in Table 5 the contribution to a pupil's growth of 3 types of teaching with individual and group SES both controlled.[6]

-- Table 5 about here --

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[6]The analysis was also performed using classroom mean scores and showed very similar differences, but the only betas that reached the .05 level of significance with 33 degrees of freedom were those for reading growth.

For white pupils reading showed significant growth under Task-oriented and conduct under Child-oriented teachers. Under Fair teachers, academic self-concept and sense of control were low and friendliness to the other race high.

For whites the number of coefficients significant at the .05 and .01 levels could almost have occurred by chance. For blacks the fact that three coefficients reach the .01 level, and five others the .05 level suggests that more than chance is probably at work. Having a pupil-oriented teacher contributes significantly to improved conduct and attendance, as well as to reading growth, and to belief in teacher approval. Having a Task-oriented teacher contributes positively to reading, but negatively to belief in teacher's approval. Having a Fair teacher contributes to improved conduct and sense of environmental control.

CONCLUSION AND DISCUSSION

The evidence tends to support the proposition that teachers play an important role in the interracial classroom and contribute more to the academic growth of black than of white children. One important finding is the necessity of distinguishing between various dimensions of teaching behavior. A factor analysis of the ratings of teachers on a modified Ryans Scale by observers who spent a week in each classroom produced three clear factors. The label Child-oriented was assigned the factor with high weights on kindly, optimistic, responsive, understanding, democratic and adaptable. Task-oriented is shorthand for the factor with high loadings on fluent, broad, stimulating and confident. "Fair" refers to the factor in which ratings on racially fair, generally fair, and systematic were high. Both zero order correlation and multiple regression analyses indicate that these factors correlate with pupil outcomes quite differently for blacks and whites.

For blacks, child-orientation or interpersonal competence in teachers contributes significantly to reading growth, and seems to lead to improved conduct and attendance, and belief in teacher's approval. Fairness in teachers contributes to improved conduct and sense of environmental control, as well as to friendliness from white classmates. Task-orientation or subject competence contributes to black reading growth, but shows a low negative correlation with other variables. The fact that neither the verbal fluency of teachers (as rated by observers) nor the length of their experience is associated significantly with pupil outcomes, whereas subjective, but independent ratings by observers are significantly related to outcomes, suggests that future studies of equality of educational opportunity should use the anthropologist's observational tools, rather than depend on more "objective" or quantifiable indices of teaching quality.

Since the sample of classrooms was small and many of the differences not statistically significant even in individual level analysis, there should be further tests of the effects of teaching style in the interracial classroom. In particular other partial relationships deserve close scrutiny, as there are many other qualities of schools, teachers and pupils than those which were here controlled which may explain or place a condition upon the relationship.

Of course, one obvious variable that should be explored is the race of the teacher. In this study not one teacher in 36 randomly selected classrooms was black. Such a built-in control was in one sense a methodological advantage, but at the same time severely limits the generalizability of the findings.

TABLE 1: Zero Order Correlation of Independent Evaluations of Teachers (First and Second Observer, First Observer and Mother), by Characteristics.

	25 First and Second Observers		35 First Observers and Mothers	
	N	r		r
Autocratic - Democratic	22	.22		.21
Aloof - Responsive	22	.49*		.34
Dull - Stimulating	25	.58**		.28
Partial - Fair, Generally	21	.36		.26
Partial - Fair, Racially	18	.47		.16
Unsympathetic - Understanding	20	.64**		.40*
Harsh - Kindly	25	.70**		.36*
Inarticulate - Fluent	25	.16		.15
Uncertain - Confident	25	.46*		.27
Disorganized - Systematic	22	.48*		.21
Inflexible - Adaptable	18	.57*		.22
Pessimistic - Optimistic	20	.74**		.34
Narrow - Broad	20	.64**		.11
Overall Score	25	.68**	35	.29

*Statistically significant at the .05 level.

**Statistically significant at the .01 level.

TABLE 2: Orthogonally Rotated Factor Loadings on Teacher Characteristics.

	FACTOR LOADINGS		
	1	2	3
Teacher Attributes	Child-Oriented	Task-Oriented	Fair
Autocratic - Democratic	.808	.193	.210
Aloof - Responsive	.912	.179	.181
Dull - Stimulating	.511	.739	.202
Partial - Fair, Generally	.600	.204	.603
Partial - Fair, Racially	.334	.176	.813
Unsympathetic - Understanding	.868	.195	.172
Harsh - Kindly	.923	.082	.152
Inarticulate - Fluent	.128	.901	.164
Uncertain - Confident	.011	.755	.415
Disorganized - Systematic	.139	.507	.679
Inflexible - Adaptable	.702	.431	.255
Pessimistic - Optimistic	.908	.170	.155
Narrow - Broad	.301	.813	.065
Overall	.700	.589	.256

TABLE 3: Zero Order Correlations for Teacher Characteristics and Individual Pupil Achievement or Attitudes, by Race.

	TEACHER CHARACTERISTICS (FACTOR SCORES)					
	WHITE PUPILS[1]			BLACK PUPILS[2]		
	Child-Oriented	Task-Oriented	Fair	Child-Oriented	Task-Oriented	Fair
Class % White	-.35**	-.21**	.10	-.22**	.15**	-.12*
Class SES	.01	-.10*	-.02	.17**	.05	-.07
Fall Reading Score	-.04	-.08	.11*	.09	.07	.03
Reading Growth	.01	-.02	.02	.25**	.05	-.05
Improved GPA	.06	-.01	.07	-.11	.10	.05
Improved Conduct	.15**	-.02	.06	.10	.05	.18**
Improved Attendance	.00	.00	-.14**	.11	-.06	-.03
Academic Self-Concept	-.05	-.01	.09	.08	-.05	-.04
"My Teacher Thinks I Am"	-.03	.08	.05	.12*	-.12*	.05
Fate Control	.00	-.03	-.03	.10	.03	.10
Friendliness to Other Race	-.03	-.05	.09	-.02	.03	.00

[1] N's vary between 373 and 497.

[2] N's vary between 304 and 412.

TABLE 4: Standardized Regression Coefficients for Mean Classroom Spring Reading Achievement Scores of Pupils on Characteristics of Their Teachers, by Race (Mean SES, IQ, Fall Reading Scores and Class % White Entered in Equation).

	WHITE PUPILS			BLACK PUPILS		
	r	β	t-value	r	β	t-value
Mean Fall Reading	(.89)	.44**	2.12	(.77)	.71**	5.13
Mean IQ	(.87)	.43**	2.55	(.63)	.21	1.44
Class % White	(.57)	.06	.60	(.17)	.03	.29
Mean SES	(.25)	.00	.01	(.31)	-.00	-.01
TEACHER DIMENSIONS						
Child-Oriented	(-.08)	-.02	-.30	(.14)	.25*	2.11
Task-Oriented	(.30)	.19*	2.53	(.18)	.03	.32
Fair	(.08)	.02	.32	(.02)	-.16	-1.55
	R^2 = .865			R^2 = .719		

TABLE 5: Standardized Regression Coefficients for Individual Pupil Outcomes on Teacher Characteristics, by Race (Sex, IQ, Family SES, Classroom SES and % White Entered In all Equations, also Prior Achievement Where Relevant).

	TEACHER CHARACTERISTICS (FACTOR SCORES)					
	WHITE PUPILS			BLACK PUPILS		
	Child-Oriented	Task-Oriented	Fair	Child-Oriented	Task-Oriented	Fair
Reading Growth	-.02	.06*	-.0	.14**	.07*	-.03
Improved GPA	.05	.03	.02	-.09**	-.02	-.03
Improved Conduct	.12*	-.02	.02	.10*	-.08	.12**
Improved Attendance	.03	-.00	-.10	.09*	-.02	-.01
Academic Self-Concept	.00	.02	-.15**	-.09	.04	.01
"My Teacher Thinks I Am"	.02	-.09	.04	.14*	-.13*	.07
Fate Control	.02	.04	-.09*	.04	-.01	.10*
Friendliness to Other Race	.00	-.04	.09*	.01	-.03	-.01

*Significant at the .05 level.

**Significant at the .01 level.

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